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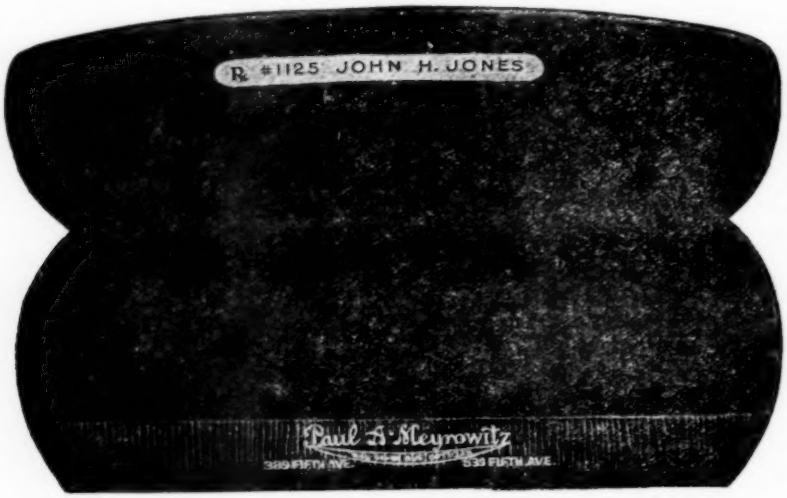

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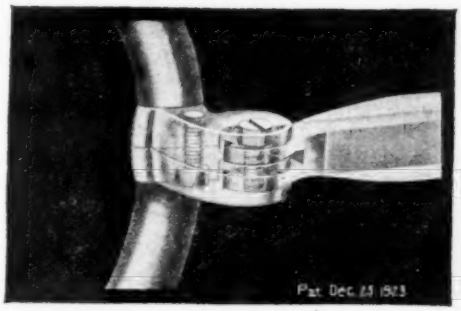

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Say: I saw it in the American Journal of Optometry

AMERICAN JOURNAL OF OPTOMETRY

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"VISION AND SEEING"

Arthur H. Bush, O. D., F. A. A. O.
Rochester, N. Y.

When we come to the correction of eye defects we have to take in consideration not only the anatomico-physico-physiological elements but also the mento-psychical conditions as well. It is not all right to say the eye resembles a "camera obscura" and let it go at that. As far as the physical refraction of light is concerned (and by this I mean the change of the velocity of the light wave as it changes its course in the refractive media of the eye) when the eye is in the state of full relaxation there the anology is all right; but can we make this statement in a broad unlimited and unrestricted way? We cannot use the same anology with regard to fixed or concentrated vision which is brought about by our power of will and is "seeing." "Sight" is then, vision plus intellectual knowledge of the thing we see. Vision is a primitive congenital elementary function sensation of light, while seeing is a mental faculty. It is our ability to recognize and therefore to know what the particular object or meaning be of what our senses report. It is not congenital, but acquired. The infant as soon as it opens its eyes, has vision, but the faculty to see is not learned until years later. Can one explain by the "camera obscura" anology, why there should be sectional accommodation in the eye, or why accommodation should be so strongly linked up with convergence?

Facts in themselves are stupid things until they are linked together, but when they are the result of human experience tested and set in order, we have, what is known as science or knowledge. Now the latter, when intelligibly stated in terms of human experience, becomes truth, but truth is never complete, it provides for its own further extension. But individuals naturally grow impatient with the slow progress of testing realities and seek far swifter answers to the problems they confront. They would hurry up matters, theories and suppositions, not by science, but by something that looks like it, and is therefore almost equally good. These "running high jumpers" as they are known in the world of science, care nothing for the difference between anology and chance resemblance, and for them homology is fundamental identity. It thus confuses attractive fancy with verified truth. The way of science, though, is as follows: first begin by finding out all you know on the subject and then pass to the consideration of the unknown only along lines definitely connected with that which is certainly known.

A ray of light is a specific stimulus to the nerve cells of the retina, from which the stimulus is propogated by the optic nerves to the cells of the visual area in the posterior lobe of the brain. The primary center of sight is in the occipital lobe and is in the neighborhood of a wedge-shaped convolution called the cuneus. This convolution is found equally in both hemispheres. That these convolutions are directly related to sight is proven by the fact, that it is only when the region of these convolutions is destroyed in both hemispheres that total blindness is produced.

The function of vision in the cuneus is undoubtedly congenital, but the child when born does not know what it sees. This particular is afterwards acquired, but not by the cuneus, only by an adjacent area of brain cells, in front of the cuneus and only on one side of the brain; in righthanded on the left side of the brain and in lefthanded people on the right side of the brain, complying with the accepted general physiology of the functioning of the faculties of the brain.

To see is to know, because we "see" only when we learn what it is that we see. The physical process of seeing stops as soon as the light rays refracted by the media of our visual organ—the eye—reach the retina. There it is changed to a neurological process and travels through the optic nerve to the visual area in the occipital lobe of

the brain. Something happens there and we get back as a result a consciousness and a knowledge of a particular object or quality. But what is it that takes place and later on gives us our consciousness of the thing seen?

All we know is derived from our human experience, either our own or some other fellow-being. We learn about things either by our actual experience or we learn by benefitting from the experience of others. As we have said before, the sense of light is congenital. The little child sees objects. They may be very diffused even very much so, but in time it learns to know what it is. It sees it once, it sees it twice and three times, and the nerve path which is instituted that way (as same sensations travel by the same nerve path) ends in a certain specific point of the visual area and is registered there and leaves an impression; and thus the consciousness of knowledge of the particular thing is instituted.

Spencer says that, "every time we see something similar we have in a weaker incipient excitement all those nerves whose stronger excitement was experienced in producing the original." When these nerve paths are transversed a few times, the resulting consciousness becomes a "habit." All of us experienced the difficulty when cylindrical correction is given to a patient in later age. When we see a chair or a table we have the conscious knowledge of those objects without being aware of it. It is habitual and is in our subconscious mind. We learn to read. At the beginning it is a hard mental task—the letters—and each one separately—must produce its picture in the letter seeing area of the visual cortex. But by and by, we have the conscious knowledge of the letters without the initial strong conscious nervous excitement. Same true with words. We all experience while reading, that we have the mental knowledge of the more familiar words as soon as the eye catches the first part of it. We do not have to have all of the picture of the familiar word, object, or phrase to be conscious of seeing it.

Seeing is then not only rays of light refracted by the eye and brought to a focus at the retina. The visual area is divided into two main parts: that of lower vision—light perception, which is congenital, and secondly, that of higher vision—knowledge of things we see, which is acquired. The second is of special interest to us, and is, as we have said, the adjacent to the cuneus and situated in front of that area. It consists of separate registries. Each physical impression that by the neurological process reaches this part of the brain, is registered separately, so that we have registries for pictures, signs, letters, words, written characters and printed ones, musical notes, foreign languages with their identical subdivisions, and any and every object that we meet in daily life. It is a cerebral library and gallery with shelves arranged side by side and one above the other and everything arranged in order. This is not fancy, but facts,—facts taken and established, by experimental physiology and corroborated by post-mortem dissections and investigation of affected brain matter.

A short historical review of the development of the above idea into scientific truth, before recitation of proofs, I think will not be considered as out of place and uninterestingly burdensome.

The first one to recognize the true doctrine about the physiology of the brain, according to historic records, was the greek Alcmaeon about five hundred B. C., who was both an anatomist and an experimental physiologist. He taught that the brain was the sole seat of the mind and the source of feeling and of movement, and, that at the brain arrived all sensations by means of the nerves. This theory of his he based by noting that the severing of the optic nerves leading from the eyes to the brain produced total blindness.

About three hundred (300) B. C., a great school of anatomists and experimental psychologists developed in Alexandria. The most noted among the disciples of that school were Herophilus and his contemporary Erastistratus. By carefully dissecting the brain they traced to it the nerves of the special senses and thus corroborated the doctrine of Alcmaeon. Their work went that far as to separate and divide the nerves into those of sensation and of motion.

A further corroboration of the doctrine that the brain is the seat of

thought and feeling was produced by the noted physician Galen about 160 A. D. and his contemporary Arotaeus of Cappadocia about 170 A. D. Of these two, to the former goes the honor and credit of establishing for all time, the doctrine through demonstrations, while the second advanced so far as to recognize correctly that the brain dominated the muscular movements of the body by nerves, which originating in the brain, crossed their tracks below in the form of the letter X, so that injuries in one hemisphere of the brain paralyzed the muscles of the opposite side of the body, while if they occurred in the spinal cord below the medulla the resulting paralysis was on the same side with the injury.

During the seventeen centuries from the second to the nineteenth, the gains made in this branch of scientific knowledge were relatively most insignificant, but the invention and introduction of the microscope in the beginning of the nineteenth (19th) century spurred on scientists to further investigations. Purkinje in 1837 demonstrated that the gray matter of the cerebrum and cerebellum is made up of nerve cells and their fibres. He also showed the brain to be a special and distinct organ connecting with nothing but nerves acting and acted upon only through nerves or nerve masses called ganglia, which are distributed through the body.

This conception of the brain as a separate mechanism in us gave rise to new theories, Gall, to whom brain anatomy owes a great deal for tracing the course of brain fibres down through the medulla oblongata, conceived that the brain convolutions served to mark it off in so many compartments each with its distinctive mental function which he proceeded to identify. He did identify and tabulated a list of twenty-four brain localities (which his pupil Spurzheim increased to thirty-eight) each possessed with special intellectual or moral attributes.

In the period of years from 1845 to 1860, a notable advance was made in the physiology of the brain and of the nervous system. The great principle of reflex action, that of the afferent and efferent elements in all nervous processes was established. The credit for this work goes to the French School of Anatomists and Experimental Physiologists. But this school maintained in opposition to Gall and Spurzheim that "any specific vibration initiated in each kind of sensory nerve thrills throughout the whole or greater part of the mass of the brain," i. e., that there were no specific localities that possessed special attributes of intellect.

In 1861, Paul Broca (after whom the Broca convolution in the brain was named) eminent French hospital surgeon, proved that there is a definite locality in the brain which is the sole locality of articulate speech. If damage be done to this locality, the power of speech is lost. He also proved that two other elements of human speech besides articulate utterance also have each their distinct and separate brain localities (see drawing). One place being found for the words we receive through the ear, damage to which causes word deafness even though there be no deafness to other sounds than words; and secondly, one place for words received through the eye in reading, damage to which causes the subject at once to become word-blind, wholly illiterate though he may see and recognize all other objects of sight as well as ever.

Ten years later, about 1870, it was shown that each of the special senses has its anatomical seat in the brain, and in addition to that, in a centrally placed zone are to be found the seats governing the voluntary movements of the muscles of the body so that each muscle or group of muscles can be made to contract by excitation of the corresponding locality in the cortex or surface of the brain. Thus the doctrine of specific brain registry for each and every intellectual faculty was nailed as scientific truth.

But nothing is truth unless it be stated in terms of human experience. Let me therefore bring here some of the substantiating facts. Dr. Hinchelwood in his book, "Letter, Word and Mind Blindness," relates the following: A patient, a well educated Englishman, came to him for consultation. He became word blind. He could read his native English in print only, with greatest difficulty, and words in writing scarcely at all. Dr. Hinchelwood was told that patient also studied French, and later Latin and lastly Greek. He tested him and found that patient read Greek fluently, Latin better than

English, but not as perfectly as Greek, while in French he made more mistakes than in Latin. Now what does this show? It shows that the languages were probably placed in the brain as books upon shelves, one above the other in the order he learned them and that injury extended only to second shelf and slightly touched third, while fourth was farther away from place of injury and therefore escaped it. It is also worth noticing that in the English the part that registered the written must have been damaged mostly. Another case of word blindness cited by Dr. Thompson in his book "Brain and Personality" is that of a lady, who getting up one morning and picking up a newspaper found that she could not read the printed matter. She could sew and crochet and see everything at near as well as at distance. There was no other disorder of vision neither of any other mental faculty, showing that only one particular part of the brain, the one that has to do with registry of printed matter, was affected.

Another very interesting case is brought out by the same author and that is of the registry of figures. A business man after an apoplectical attack was left with muscular paralysis, word-blindness and speechlessness, but could hear well and could see figures and compute. In his case then the place for the localization of figure seeing in the visual cortex was so far away from the eye-word registry as to escape damage.

Professor Edgren tells of patients who had lost their faculty to read music though they were unhampered in reading words and vice versa. Some become word-blind without being letter-blind, while still others can see things and objects but have lost the faculty to know what they see. Dr. McEwen tells of a case of a mechanic who after a severe injury to his head could see physically, saw objects but could not tell what he saw. What he saw conveyed no impression, gave no knowledge to his mind. He was unable to recognize his wife and children, and knew them only by voice. He had vision but could not see. After an operation in which pressure upon a certain part of his brain was relieved, he recovered fully.

And so we come to the conclusion that "seeing" is not congenital with us although vision is. We have to teach our brain to see. It is ultimately a mental process—a neuro-psychological one. Anything and everything that comes in line of our vision is by a physico-neurological process, registered in some point of our visual area in front of the cuneus and adjacent to it. Whenever the same object comes in our view it is registered at the same point. We learn to know it —to see it. After that our seeing of familiar things is memory. Sir Hamilton proved that persons who lost their sight but in whom the brain remained normal and unaffected, retained their imagination of colors and forms as vigorously as when vision was entire. If not for the fact of memory we would not have the clear consciousness of our indirect seeing when our mind is occupied by the direct seeing. If you were in unfamiliar surroundings, fixing particularly some one object in direct line of vision you would soon have found out that you have very little consciousness of things situated around you in your field of indirect vision.

Since we have proven that memory is a primary pillar in the process of "seeing," we must "see" in what a part and how its attributes are correlated in this action. Memory as such has three primary or fundamental attributes which may be stated to be Consciousness of Difference, Consciousness of Agreement and Retentiveness.

In the education of our mind to see, it seems to me that Consciousness of Agreement comes first. There is an innate quality in the human character of the child the motive power of his whole being, which is "interest." When anything comes in line of his vision, immediately there is an impulse sent up to his motor centers and a hand is stretched out to get a hold of the thing to find out what it is. There is an impression on the retina of both eyes. This impression is not clear and is double. If the baby is brought nearer to the object or brings the object nearer to its eyes, it finds that the thing agrees in general outline as the one it has seen from afar, but notices also that the thing is clearer and bigger. And from this first discovery on, it will always bring things as near the

eyes as possible. The baby, by the way, starts out to consciousness of agreement through accommodation. Later on, after experiencing a certain impression and passing from it to something else similar, the recurrence produces a shock of consciousness, or recognition. Pretty soon the baby learns to see the thing and to know it without having to concentrate as much accommodation on it.

Linked up very closely with Consciousness of Agreement is Consciousness of Difference. As the baby reaches out for the thing that impressed it, it finds out first of all that what had been two—is in reality only one. It also may notice that the thing gets larger and may become also brighter in color and more definite and clear-cut in outline. Due to third Consciousness of Difference, the child learns pretty soon to converge—to see one thing instead of two. Whether this power of convergence is acquired fully by a voluntary conscious act of the will, or is helped along in development by an innate hereditary predilection. I do not undertake at present to voice an opinion. In time the child finds out that instead of accommodating first and converging afterwards, it can accomplish both things at the same time, and in this it is helped along by "Will." This action by repetition becomes a habit, and the latter growing in strength gives the result of "as we accommodate we converge."

Retentiveness is the continuance and persistence of conscious impression after the withdrawal of the agent or cause. It is the so called placing of the registries upon the cerebral library shelves in order and for future use. After the thing has been assimilated and tabulated by both Consciousness of Agreement and Consciousness of Difference—by the knowledge of things seen, it is given over to Retentiveness who places it in the archives of our knowledge to be ready for use at the first call. Retentiveness is the librarian of our cerebral library and keeper of our cerebral gallery.

To sum up:

1. Vision and seeing — knowing what is seen—are not the same thing.
2. To see—to perceive by the eye, to have known of the existence and apparent qualities of things by the organs of sight, to examine with the eyes, to perceive by mental vision, to note with the mind. Sight—synonymous with see. Vision—the sense by which light and color are apprehended.
3. Vision is congenital while seeing is acquired.
4. Each one of these mental processes has its separate material seat in the brain: "vision" in the cuneus, while "seeing" is not located in the cuneus but in the adjacent area of brain cells in front of the former.
5. The anology of the "camera obscura" to "seeing" is faulty to say the least.
6. We should constantly bear in mind the fact that we are treating patients, not eyes only; we are handling human beings and not machines; and that we cannot do our best unless we (in each case) take in mind all (both the physical and mental) factors which may effect and determine the need for the refractive correction.
7. In correction of eye defects psychology of seing should be given same attention as physical status of the refractive mechanism.

SUGGESTED ROUTINE IN OPTOMETRIC EXAMINATIONS

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PART II

Phoria Test at Distance

When I was a boy, if there was a threshing machine in the neighborhood, I was usually on hand to watch proceedings. I always noticed in setting up for a new job the first thing the men did was to throw dust, light chaff or straws up into the air and watch them fall. I learned their object was to determine "which way the wind blows." So in an ocular examination one of the early tests should be the Phoria Test at Distance for it will help you to ascertain which way the wind blows.

If the patient before me has not been wearing distance glasses and his vision is not badly impaired in either eye, I make the phoria test as my sixth step. If the distance vision is so poor as to make a phoria test impracticable, and if the pinhole test as previously suggested indicates amblyopia or cataract I go at once to the Ophthalmoscope. But as long as I have hopes of improving the vision of the patient I do not use the Ophthalmoscope at this time as I believe its use, blunts the vision of the patient temporarily at least. The Ophthalmoscope is a diagnostic instrument pure and simple and in my estimation the logical time to use it is at the close of the examination.

If the patient before me has been wearing distance glasses, the phoria test should be made with these glasses on, and also without them if vision is sufficiently good. Should we find that the patient's old lenses accentuate his phoria at distance we know they are, at least, part of his trouble. About a year ago I was visited by a patient who exhibited 15 prism-diopters of esophoria at distance and she was wearing minus four diopter spheres. Hasten the day when the rank and file of Optometrists will have both knowledge and courage enough to prescribe for their patrons, not necessarily those lenses with which they see the best, but rather those which are best for their eyes.

When a phoria at distance has been discovered which *per se* is worthy of specific attention, it should be checked in various ways. If the phoria be real, the tests will substantiate each other fairly well. A definite decision however should be withheld until the near point tests are made and I will take them up later.

Ophthalmometer

I recently heard one of our national clinicians state that he preferred to use the ophthalmometer after the retinoscope because he did not want his findings with the later instrument to be prejudiced by the former. I maintain that the greatest good to the patient should be the goal of every examination. Keeping this premise in mind let us consider the following: Does the retinscope compare in accuracy with the opthalmometer as regards the axis of an astigmatism? Can it be denied the findings of the ophthalmometer are real, if properly interpreted? Are not the findings with the retinoscope more susceptible to influence of the accommodation of the patient than are the findings of the ophthalmometer? Then why give a possibly false condition precedence over a real condition? What would you think of a civil engineer who based his surveys on a faulty base-line instead of first establishing a true base-line.

I have just finished reading Ryer's Ophthalmometry. For the sake of those who have not read it may I mention one or two of the main points of the book? He says inasmuch as it is con-

sidered good practice to crowd on plus in cases of suspected latent hyperopia, why does not the same reasoning hold good when applied to the opthalmometer? Further, in the case of hyperopia we have merely the suspicion, while the opthalmometer tells us the astigmatism is actually there. Again, since the fact that a patient will not always accept the full dynamic findings of the retinscope does not disprove their worth, neither does the fact that a patient will not accept all the cylinder shown by the ophthalmometer prove that its findings are wrong. Dr. Ryer suggests for our consideration the idea that when a corneal astigmia is neutralized by a lenticular condition, it is evidence of a sectional astigmatism in the crystalline lens. Should this condition go uncorrected it will likely result in interference of nutrition in the lens and possibly result in cataract.

May I suggest the following discussion? Have you ever seen a corneal astigmia of three diopters or more **completely** neutralized by a lenticular condition? I confess I never have. Why? The logical answer would be because the error is too great for the ciliary to overcome. Well then, we must admit it is only errors of low degree the ciliary can overcome by contortion of the lens. Then it also follows that these neutralizing conditions are in themselves false. Then why is it not logical to correct the real condition as shown by the opthalmometer? If we do not correct the astigmia, in time the normal tone of the ciliary will become depleted and the astigmatism will become manifest anyhow. Either that or the spasmodic condition of the ciliary and lens will become permanent with inherent tendencies toward cataract. In either case it had been better to correct the astigmatism in its early stages.

Retinoscopy

Did you ever go into a dark room with which you were not familiar and attempt to find the electric light that was suspended **somewhere** from the ceiling? You start groping over your head; you stumble over a chair; you bump into the bed; you wonder "Where in the Dickens is that light"; then bing! it hits you on the head. I have often felt that one who attempts to examine a pair of eyes without using the retinoscope is just like that; he is completely in the dark.

The College of Optometry which I attended taught us to use the Static Method. At that time the Dynamic Method was little used and understood less, and for that matter we do not thoroughly understand it yet. We used a plus 2.00 D. lens in the back cell of our trial frame to neutralize the working distance of 20 inches, so that the real findings were in the front cell of the trial frame.

After finishing school I was fortunate in being associated in practice with my father, who was (and is yet) a staunch advocate of the Fogging Method. Otherwise I would have made many more mistakes than I did, and I did make some. From a systematic study of my findings statically with the retinoscope and subjectively with the trial case I found that with the retinoscope I would undercorrect hyperopes and overcorrect myopes just about a half diopter. I soon learned to overcome this disparity by using only a plus 1.50 D. lens in the back cell of the trial frame while still working at 20 inches and my findings began to take on the semblance of reality, in other words they would prove out subjectively. While I am fortunate now in having a Genothalmic Unit I am still using the calculations as above outlined in making the static test.

During the period of metamorphosis described in the preceding paragraph I was also methodically recording my dynamic findings, but I did not know how to interpret them. I merely had them that is all. One day I read an article in a magazine by E. LeRoy Ryer and in it he told me how to apply my dynamic findings. Since then I have been a firm advocate of the dynamic method, practicing it on absolutely every case.

Dynamic Method

Let me state at the outset that I hold this to be the most important step of the examination. There is no objective method so absolutely reliable as the dynamic when rightly applied. More than that there is no method, in my opinion, that will fathom more deeply latent errors of refraction, cycloplegic methods not excepted. Further still there is no method more prophetic of the future. Is it not prophecy when you can set down in

advance the correction a patient will accept a year or two later?

When it is desired to measure a man's strength, what better method than to see how much he can lift? When I was a boy we used to sit on a pair of warehouse scales and by pulling upward ascertain who could lift the greatest weight. That is just exactly what you are doing when you refract a pair of eyes at the near point. When the eyes are focussed at the reading distance, fusion, convergence and accommodation are all active and with the retinscope you can visualize the result of the combination of all these faculties.

Briefly I practice the dynamic as follows: I work at sixteen inches with fixation of the patient at the same distance. I crowd on all possible plus until I get a reversal of motion then reduce to that strength which gives me the first appearance of the oroflame, the reflex at the center of the pupil tinged with red. This finding will be the actual reading correction if the patient is forty-two or upwards in age. If the patient is under forty I reduce the dynamic finding by one diopter and I have the reading correction; if the patient is under twenty I reduce the finding by a diopter and a quarter. In the last two instances, after making the suggested reductions you will also have the distance correction of the patient provided there is no latent hyperopia. With the patient under forty if it is necessary to reduce the dynamic finding over a diopter and a quarter to get normal vision at distance, your patient needs two separate corrections, one for distance and one for near. Also there is no method that will be a safer guide to keep you from over prescribing minus than a careful consideration of your findings as outlined in this paragraph. Let it be noted that the suggestions referred to relate to plus values; when the original dynamic finding results in a negative value the distance Rx will call for an increase of a diopter or a diopter and a quarter.

In most textbooks on refraction you will find the statement that one should always make the distance test before the near test. Where subjective methods alone prevail this may be the proper procedure, but in my practice I invariably obtain the near correction first dynamically and then work from that back to the distance correction. In fact one can forecast the distance correction in advance if he has done his dynamic work carefully. The deductions suggested in the previous paragraph will apply for patients under forty and for those over forty or forty-two the usual difference between the distance and near correction will be found to prevail depending upon the presbyopic stage of the patient.

Cross-Cylinder Test at Near

With the dynamic findings still before the patient's eyes the next logical step is the cross-cylinder test. I think it is well to make the test monocularly and binocularly. For this reason I have displaced the prisms in the Stevens Phorometer with a pair of cross-cylinders and I find it but the work of a moment to make the test. This test will serve as a reliable check on your dynamic and if they substantiate each other you can bank on your findings.

Some writers advocate the suspension of fusion when making this test and urge the crowding on of plus along with prism base in to keep the targets in alignment. I am not a proponent of that method. With vertical displacing prisms to allay fusion, with prisms base in to quiet convergence, with the cross-cylinders to retard accommodation, who could say the eyes were functioning under anything like normal conditions? The findings back of such a battery of lenses and prisms would be problematical to say the least.

Phoria Tests at Near

With findings of dynamic and cross-cylinder test still before the patient's eyes, the next logical step is the phoria test at near. For several years I have used the line and arrow test at sixteen inches. I use six prism diopters Base Down on the right and six prism diopters Base Up on the left, with the units of displacement on the horizontal line 4 mm apart. This line should be at least two hundred mm long with the spaces to the right of the middle point numbered in black and to the left in red. The arrow should be 42 mm long and 6 mm above its head a short horizontal red line. This line is used in testing for a vertical phoria at the **same time** I am taking the lateral phoria. Most writers, I believe, ad-

vocate creating diplopia by horizontal prisms when testing for hyperphoria. In my opinion the images are more steady and results more reliable if both vertical and lateral phorias are investigated with vertical displacing prisms.

With the vertical prisms and near point correction in place, if the patient reports the arrow at 5 or 6 of the black letters and the red horizontal line coincides with the horizontal black line there is no hyperphoria present and the exophoria would be considered normal. If the red line appears above the black line, the amount of prism more than the twelve prism diopters already in place necessary to make the lines coincide, measures the right hyperphoria at the near point. If necessary to diminish the twelve prism diopters already in place, the amount of decrease represents the amount of left hyperphoria at near.

If a hyperphoria at distance is corroborated by the near test, one is safe in prescribing vertical prisms according to the degree of hyperphoria. However should the near test indicate much less hyperphoria than the far test I would go slow on the prisms. In my own practice I do not correct a hyperphoria unless it registers more than one prism diopter at the near point.

NOTES ON THE ACCOMMODATION OF THE EYE

Roscoe L. Coffin, Opt. D.

Baltimore, Maryland

Definitions

Accommodation: "The voluntary action whereby the eye becomes adjusted to a nearer point than is the case in the state of rest of accommodation."—**Donders.**

"The power of alternating the focus of the eye so that divergent rays are brought together on the retina."—**May.**

"The power of the eye to adjust itself for near vision is known as the Dynamic Refraction or accommodation."—**Copeland & Ibershoff.**

Range of Accommodation: "The distance between the far and near point."—**May.**

Amplitude of Accommodation: "The difference between the refraction power when at **rest** and when the accommodation is exerted to the utmost." —**May.**

The Far Point (Punctum Remotum): "When the eye is in a state of rest with accommodation completely relaxed, it is adapted for its far point. This is the **farthest** point of **distinct** vision. And in the emmetropic eye it is situated at infinity."—**May.**

The Near Point (Punctum Proximum): "Is the nearest point at which the eye can see **distinctly** when employing its maximum amount of accommodation."—**May.**

To Thomas Young in 1801 we are first indebted for the proof that accommodation is due to a change in the form of the lens though accommodation itself had been known centuries before. These proofs were elaborated and formulated by Helmholtz and Cramer many years later.

The reflected images discovered by Purkinje in 1823 were a means of positive proof of the change in the lens accommodation, but it was not until Langenbeck in 1849 in a painstaking investigation used these images to prove that in accommodation for near objects the anterior surface of the lens becomes more convex—Donders then suggested to Cramer that by means of these images the curvature of the lens could be measured—and Cramer accomplished this feat successfully.

Tcherning's theory that the contraction of the ciliary produced tension by the suspensory ligament hence pressure in the periphery of lens causing

the increased refractivity is not generally accepted—though Tcherning in an experiment on an animal with its cornea removed says he actually witnessed this change in the shape of the lens.

In "Copeland and Ibershoff" we read: "We are indebted to Helmoltz for our knowledge of the physiology of accommodation and so complete were his researches as to leave little for modern investigators to add."

Holmholtz' theory is this: The contraction of the ciliary muscle pulls forward the choroid releasing the suspensory ligament hence the lens of its own resiliency becomes more convex —the iris plays little part in the accommodation and the cornea none at all—no changes in the cornea in accommodation have been noted—yet in many cases I have examined with the Ophthalmometer changes in measurements have been noticed which seem without doubt due to the accommodation.

Donders in his investigation found the **Amplitude of accommodation** varied greatly in the emmetropic eye at different ages and he finally completed an accurate tabulation of these changes according to age. This table begins at 10 years of age with 14 diopters, then diminishing until at 75 the patient has no accommodation.

The amplitude of accommodation is determined by the following simple formula: 40 divided by the near point in inches=diopters of accommodation or 100 divided by the near point in centimeters=diopters of accommodation.

The amplitude of accommodation is of very great value in determining the amount and variety of Ametropia. It enables us to determine with some exactness whether an eye is Hyperopic or Myopic—and to what extent. Two methods of measuring the accommodation can be used. The eye should be emmetropic for distant vision. First: Measure the near point using fine print accurately in inches or the metric system. This measurement should be from the cornea. Second: Distant vision being emmetropic place concave lenses before the eye—the strongest concave lens through which distant vision remains is the measure in diopters of the accommodation (Brown).

The refractionist has in the near point in conjunction with the table of accommodation a means of determining ametropia which when carefully and intelligently used removes the necessity for paralyzing the accommodation with drugs and saves much discomfort and expense to the patient.

Donders (pp. 278-279). In speaking of Hyperopia and Asthenopia: The first thing we have to do in Asthenopia is to determine the degree of Hyperopia; in other words, to examine what is the strongest convex glass with which the vision of distant objects becomes acute. This glass is, however, seldom sufficient completely to guard against fatigue in close work, but it is only when the patient can do this without any inconvenience and when, moreover, with these glasses the binocular near point lies but a little farther from the eye than in the emmetropic organ at the same age, we can determine in favor of commencing their use—"Also that the correction of Hyperopia alone is seldom sufficient to give relief."

"I very seldom also find Asthenopia to have recourse to the employment of Mydriatics for the determination of Hyperopia" and on page 280—"We wish gradually to give stronger glasses, and, therefore, we investigate from time to time in our Asthenopic patients the position of the relative region of accommodation."

Copeland and Ibershoff, pp. 59 (1906): "The refractionist who is skilled in the use of test case and confirmatory tests, and who has tact and patience may learn to coax out the most obstinate accommodation and accurately measure the degree of eyestrain without the routine use of a Mydriatic. The more skilled the refractionist, the less will he depend upon the drug."

In dealing with the subject of accommodation it is well to bear in mind the two great bugaboos of the refractionist—spasm and paralysis.

In treating these two conditions I shall quote exactly from May's diseases of the Eye, pages 354, 355 and 356—Ed.1917.

Paralysis of Accommodation

"Paraylsis of the accommodation is a partial or complete loss of power in the ciliary muscles due to paralysis

of the third nerve or of that branch of the motor octali which supplies the ciliary muscle and iris. Etiology—The most frequent cause is the use of Mydriatics. It may be part of a complete paralysis of the third nerve.

Symptoms. There is a loss of power of accommodation and dilation of the pupil. If emmetropic the patient will have good vision for distance but will be unable to do near work without convex lenses. If Hyperopic both near and distant vision will be impaired. If Myopic the patient will be able to see only at his far point—he may therefore be able to do without his accommodation if the Myopia is considerable.

Prognosis. Is usually **good** especially when the affection is due to syphilis or diptheria. In traumatic cases the condition may be permanent."

Treatment. The treatment does not concern us except for the relief of near vision with convex glasses.

Spasm of the Accommodation

Tonic spasm of the ciliary muscle is frequently seen in children and young adults; it occurs generally in Hyperopia but it may accompany any error of refraction.

Etiology. It is usually due to long continued application of the eyes for near work, especially when the young patient is in poor health, has uncorrected Ametropia, and the work has been excessive and done with poor illumination.

Symptoms. Both eyes are usually affected. There is Asthenopia and diminished acuteness of vision. In emmetropia the spasm gives rise to the signs of Myopia. In Hyperopia it reduces the amount of manifest error and increases the proportion of latent Hyperopia or it may even cause the patient to appear Myopic; in Myopia the error is increased. The diagnosis is made after instilling a cycloplegic, in some of these cases homatropine is insufficient and atropine must be used.

Treatment. Consists in the abstinence from near work, the correction of Ametropia, attention to the general health, and the production of paralysis of accommodation for a few days or weeks by the instilling of atropine."

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OPTOMETRIC NOTES

THE PRISM REFRACTOMETER

G. L. DuPlessis, Opt. D.

Minneapolis, Minn.

From Germany comes to us a new instrument of refraction not without merit. It is the non-refractive prism refractometer made by the Bodenstock Optical Works and intended to determine ametropias objectively. This instrument uses the Schmidt-Rimpler grating method and takes into account Gullstrand's latest research on reflexless ophthalmoscopy.

The instrument is simple and neat of construction and requires but little time for operation. Errors or refraction, spherical and cylindrical can be ascertained in either plus or minus up to twenty-one diopters and the error factor is claimed to be within one quarter diopter. The time required to ascertain the refractive error of a pair of eyes is at the most two minutes. While it is not desirable to rush off a refraction, this test can very advantageously be used as a check, and its rapidity leaves the refractionist plenty of time for other tests which are generally overlooked except in flagrant pathologic cases. The instrument is mounted on a solid pillar with a broad base, to this pillar is fastened a movable chin rest and a head rest. The instrument itself can be moved laterally and vertically. The operator looks through a telescope and the ophthalmic mirror at its end without being disturbed by the reflexes of the cornea and lens. A knob is rotated until the distinct image of the line grating is seen through the telescope and the refraction for that meridian is read at the index in the back of the instrument.

The movement of this knob engages a disc of lenses automatically which neutralizes the operator's accommodation.

Another feature of the instrument is that the length of the telescope permits the interposition of a sanitary curtain between the patient and the operator. Illumination is supplied by an ordinary flashlight cell or by connecting with the main circuit and interposing a suitable rheostat.

The main feature of the instrument is that it is entirely objective in nature, that the patient does not see what the refractionist is doing and that the whole process is rapid and accurate for check purposes.

NOTES ON PHYSIOLOGICAL OPTICS

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Minneapolis, Minn.

A short time ago I read an interesting article in the American Journal of Optometry on "Instruments, Then and Now." The writer went on to state that it was no longer necessary to ask the patient various questions during the course of the refraction inasmuch as the examiner could, by means of instruments, get all the necessary data, without any "cross examination," or words to that effect.

That is very true. Modern refracting instruments are very commendable and complete sets should be found in every office. These instruments, if rightly used will certainly increase the proficiency of the user. However, unless the refractionist has a well balanced education in physiological optics to go with the mechanical knowledge he has of refraction, the findings of the instruments become just that much of a source of hindrance and bewilderment. On the other hand, when the refractionist is familiar with the underlying principles of vision, he should always follow the findings given him by the instruments, in preference to merely getting this data and then writing a prescription of a different character as did Farmer with his case of Exotropia as mentioned in the March issue. While Farmer is apparently help-

ing this case, the writer feels sure that he would have made faster progress had he continued the use of the plus lenses as indicated in both his static and dynamic findings.

The following are a few simple rules which have proven of value to me and which may help other refractionists in their daily routines.

In the first place, remember that there are certain unmistakable exhibits of the nervous system which when understood are more definite and exact than even the mechanical action of lenses and prisms.

As for instance exophoria almost invariably shows nervous depletion, and to supply a patient with a minus lens under such conditions when a plus lens gives equal vision, shows either gross carelessness or ignorance of physiological optics.

Whenever a plus lens gives as good vision as a minus, no matter what the difference may be between the two extremes, never give the minus lens.

In regard to cylinders, we find many practitioners who prescribe 0.12 cylinders. Now this is purely mechanical fitting, and if it does not directly irritate the eye, it can not accomplish anything good.

A good rule to remember is this: If the cylinder does not improve vision decidedly leave it out. And in elderly people never attempt to put in a cylinder less than 0.50, and nine times out of ten these are better left out.

There are also a few good things to remember when one begins to refract any case. Here is one: if the patient sees 20/15 with both eyes, or 20/20 with either eye distinctly, there is not enough astigmatism in that case worth correcting.

We must always remember that the patient is the one who must wear the glasses—not the doctor. It is the patient's ability and ease in handling his work that counts, and not the small mechanical corrections which many people are forced to wear against their wishes.

When physiological optics go hand in hand with the mechanical findings of the instruments, then we may look for perfect work.

REPORTED CASES

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Oklahoma City, Oklahoma

Elderly Patients' Inability to Use Cylindric Corrections

Ware (4) reports a case of a man 82 years of age. This patient called at his office with the express purpose of getting a correction which would give him the best distance vision possible. After a detailed refraction, in which Ware found his eyes to be entirely free from any type of pathology, the following prescription was given to the patient: O. U. + 2.50 D. Sph. () + 1.00 D. Cyl. axis 180. This gave him 20/20 vision. Without the cylinder, the best comfortable vision possible was 20/40. Yet the patient could not use the cylindric correction with comfort, stating that things viewed through them seemed "wavy." **Warren** (5) reports a somewhat similar case in which the patient, while admittedly seeing better, could get no comfort with the cylindric correction.

Astigmatism, real or acquired, in elderly people, must be handled very carefully. It is almost a safe rule to never prescribe cylindric corrections for these cases, unless they have been using them with comfort for some time immediately previous to the examination. This sounds like rather poor optometry, yet the reason for it is clear, at least to the writer, his reasoning being as follows: An elderly case presents itself, having a dioptre or more of uncorrected astigmatism. Sectional accommodation has, perhaps for years, partially overcome the effects of this astigmatism, and in elderly patients the writer has found it practically impossible to break down this habit of the ciliary muscles in their effort to improve vision by causing a malcurvature of the lens to

overcome the physical distortion of the image caused by the corneal malcurvature. Thus making the wearing of cylinders impossible.

On the other hand, **Ryer** (3) suggests that all corneal malcurvatures be corrected with cylindric lenses, particularly those in middle-aged and elderly patients. His theory being that the unequal strain on the lens in its effort to overcome the astigmatism caused by the corneal malcurvature will bring on changes in the lens which will eventually lead to cataract.

This theory may or may not be true. If it is true, how does Ryer account for the fact that we run into cases every day of patients from 15 to 40 years of age who have been doing this very thing for years with no sign of lenticular opacities? Indeed, we find patients of all ages, who have lived their lives with uncorrected astigmatic errors showing, no signs of cataract. The percentage of these cases is far greater than the percentage of cases showing any sign of lenticular degeneration.

However, should Ryer's theory be correct, ways must be found to get the patient to accept the cylinder with comfort. The writer suggests the following procedure when it is found necessary for any reson whatsoever to prescribe cylinders on elderly patients. Instead of prescribing the + 2.50 D. Sph. () + 1.00 D. Cyl. axis 180 as did Ware at the start, prescribe a + 2.50 D. Sph. () + 0.25 D. Cyl. axis 180, to begin with, having the patient use this for a two-week period and then increase it to + 2.50 D. Sph. () + 0.50 D. Cyl. axis 180 and so on up to the proper correction. By adding the cylinder gradually the writer believes there would be more chance of giving comfort to the patient than by giving the full correction at the start, although even this is problematical.

Relief Afforded by the Correction of Low Errors of Refraction

Brett (2) reports a case of a patient who wore a pair of + 0.25 D. Cyl., oblique axis. This patient, he claims, was quite helpless without them. He reports another case of a patient wearing the same type of correction who noted an immediate cessation of early morning sickness on having this slight amount of astigmatism corrected. **Aves** (1) found that in 4,000 eyes which had been successfully corrected, the records picked from his files at random, 1,800 came under the category of low corrections, corrections whose total was somewhere under 1.00 dioptre of either hyperopia, astigmatism or myopia. He feels that it is a mistake to tell a patient that his or her eyes are normal when we find a quarter or a half dioptre of refractive error present. Headaches and nervous disorders are frequently relieved by the constant use of these low corrections which he claims should always be prescribed.

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ABSTRACT DEPARTMENT

Optometric and ophthalmic Journal articles and reprints to be abstracted should be sent to Dr. G. L. DuPlessis, 209 Yeates Building, Minneapolis, Minnesota. Only papers of interest to optometrists will be reviewed in this department.

Micropsia. Von Berger F. Annali di O. e Clinica O., p. 235. (Italian) 1925.

Micropsia can be brought about in two ways: (1) It can be entirely subjective and can be caused by an error of judgment due to an insufficiency of accommodation, *i.e.*, the eye, in order to secure a clear image of the object on the retina, accommodates in excess of the amount required for that purpose and hence judges the object to be nearer than its true position. But as the image does not increase in size in proportion to nearness, it is judged to be smaller than it really is. (2) It can be anatomical in nature when the retinal image of the object impresses a number of visual cells of inferior sensitivity than the normal, for example, a choroidal exudate forming a macular chorio-retinitis. In these cases micropsia is accompanied by metamorphopsia.

G. L. DuP.

A New Ptosis Spectacle. Poulard & Azelin. Annales d'Oculistique (French) Feb. 1926.

The authors presented at a meeting of the Paris Ophthalmological Society, a new ptosis spectacle consisting in two small spiral springs bent into arcs of circle and affixed to the upper nasal and temporal sides of an ordinary spectacle. These springs compress the upper lid against the supra-orbital bone and maintain the lids opened in a degree variable with the pressure of the spring.

G. L. DuP.

A Spatial Blind Zone in Binocular Vision. Padovini S. Arch. di Opht. (French), No. 3, 1925.

Shortly after Mariotte proved the existence of blind spot in the eye, Picard announced that of a blind zone in binocular vision; this zone the author studied by means of Green's chromatoptometer placed at a distance of 4 meters in a dark room diffusely illuminated by a red light. He arrived at the following conclusions:

(1) The blind spot phenomenon affirms itself in binocular vision only within certain limits of convergence (12°).

(2) The point of apparition of this blind spot can be calculated from convergence when the point of fixation is within 13 cm. for a P.D. of 58 mm. and 15 cm. for a P.D. of 64 mm.

(3) Outside of these limits we can really speak of a true binocular blind zone, variable as to form, size and distance, with convergence.

(4) This blind zone, as it gets nearer the observer, successively assumes conical, conoidal, and cylindro-conical shapes.

(5) Beyond the limits above mentioned, the zone assumes the shape of two cones united at the base and of size diminishing proportionately to the distance.

G. L. DuP.

Perimetry. Zeeman, W. P. C. Arch. Fur. Aug. (German), Vol. 96, 1925.

The method of measuring the visual field exposed by the author differs from those in use at present by the fact that the fixation object is a spot of light projected on a white, plane surface dimly and homogeneously illuminated by a number of lights. The fixation spot can be projected in all directions by means of prisms and the use of diaphragms and colored filters permits variations as to luminosity and color. The advantage of this apparatus lies in the possibility of examining the visual field at different distances using various conditons of experiment.

G. L. DuP.

Correction of Keratoconus with Contact Glasses. Dohme, B. Zeits. Fur Aug. (German), June, 1922.

The author obtained in seven patients, considerable amelioration in vision by means of the contact glasses of Zeiss. These trial glasses are made

in three sizes, and out of this three is chosen the one affording best vision, generally the weakest. Errors of refraction are ascertained and these are ground into the keratoconus glass at the factory. They seem to be well supported by the patient and though at first they produce a little corneal aedema, this does not materially interfere with vision. The glasses are inserted the same as an artificial eye and the wearer soon learns to apply them himself.

G. L. DuP.

Congenitally Blind Successfully Operated on at the Age of 29. Ferrer, H. Archives de Oftalmologia Hispano-Americanos (Spanish - American). Nov., 1925

Ferrer minutely studied the development of the visual function in this case. There first was photophobia; then objects were seen but not recognized, lack of co-ordination of the extrinsic muscles, etc. The patient recognized objects which he saw, only after having touched them and landscapes evoked no memory whatever. Judgment of distance was impossible and colors at first were confused. The patient being placed before a mirror believed himself in the presence of a stranger and began a conversation. The author in closing denies that the blind have an instinct in sense of obstructions in their path. This type of case is very interesting and rare, and was first described by Cheselden in 1872.

G. L. DuP.

Humor at the Refraction Hospital. F. T. Gregg. The Refractionist (British). Vol. 13, No. 152, p. 88, 1924.

The following paragraph, reproduced in full, appearing in the secretary's monthly report of the Optometrist's Refractive Hospital in London, exemplifies in a splendid humorous manner the care we all must take in using technical terms before our patients and also the advisability of making our records so clear that they can be easily read by others at some later date.

The lighter side of the work. Two items of humor will be appreciated by the readers, each having their warning for others. A patient at the Hospital returned to the Optician who sent him, saying that his eyes were thought to be seriously affected. The Optician in some alarm rang up the Secretary, and enquired if he could tell him what the trouble was. After looking up the record of the patient, the Secretary stated that there was nothing on the card to suggest anything beyond normal refractive trouble, there being apparently no pathological symptoms of any kind. Could the Optician oblige with any further information, what did the patient say those at the Hospital said. The reply came back, "Mr. Blank said there was 'fungus in the eye,'" followed by the remark, "What an ass I am, of course the patient heard someone speak of the 'fundus' and confused it with 'fungus' and I never thought of it before." The other story is of a different character. It is notorious that all clever people write badly, and the saying is a great comfort to many. It is usual for those recording the various items on the record cards at the Hospital to put their initials opposite the space for which they are responsible, and if need be to draw a diagram of the trouble apparent. On one occasion a Student had carried out the observations and handed in his card for confirmation by the Refractionist. The Refractionist looked at it, and said pointing to some peculiar marks on the card near the "corneal" space, "Is this a corneal opacity, or a case of incipient cataract?" The Student replied (with a look of pitying surprise), "That—why those are my initials." I would commend this story to others besides those attending the Hospital.

C. C. K.

BOOK NOTICES

New Books for review should be sent to Dr. E. O. Fjelstad, 209 Yeates Building, Minneapolis, Minnesota. Only Books of such nature as to be of interest to optometrists will be used in this department. Optometric and Ophthalmic publications that have been issued in the past and which are still procurable through their publishers will also be reviewed, from time to time, as space permits.

HYGIENE THE OPTOMETRIST OUGHT TO KNOW. By Frederic A. Woll, Ph.D., Associate Professor Department of Hygiene, College of the City of New York; Optometry Course, Columbia University; Member of the New York State Board of Examiners in Optometry; Honorary Member: American Optometric Association; etc., etc., 208 pages, illustrated. Copyright by Prof. Woll, printed by Press of Schlueter Printing Co., New York, 1921.

This book is written by a man to whom optometry owes more than it will ever repay. It is a book that should be thoughtfully read and studied by all optometrists. It is written by Professor Woll, who is a master of the subject, and written entirely for optometrists in the language they can best understand.

In his dedication he mentions the progress that optometrists must ever be making in this simple straightforward manner—*"This Book is dedicated to those indefatigable workers in optometry who have never learned to know what it means to stand still."*

The text points out the need for the thorough study of hygiene on the part of the optometrist, so that he can, not only set a good example for his patients in the matter of eating, resting, exercising, cleanliness and proper habits, but can also aid and advise his patients in these important phases of health work.

A chapter of the book deals with the Causes of Disease, and the study of these pages alone will give the practitioner of optometry a splendid ground work which can be gained from no medical text in as easy a way.

The final chapter deals with some of the essential, personal phases of hygiene as they apply to the office practice of the optometrist and contains much that should be studied and put into practice in all optometrists' offices. In this chapter Professor Woll mentions in a humorous manner the refracting room of old, which (fortunately for optometry) is fast disappearing. We are taking the liberty of quoting this passage in full as it is delightful:

> "The examining room at one time was a mysterious place. The walls were painted with a paint made out of lamp black and turpentine. At one time it seemed more important to know how to properly mix the paint for the 'dark room' than to know how to use the fogging method. That day passed years ago. At that time there were no windows and no ventilation in the 'dark room.' There were some instruments and other paraphernalia and a considerable amount of litter which had found its last resting place in this room of Egyptian darkness. Sometimes there was a coal stove which in summer time gathered dust and in the winter time was stoked with what seemed an almost malicious attempt at intimidation or a warning of what there was to come each time a patient dared to enter the 'dark room' for an examination. It needed courage and daring to have one's eyes examined in those days. Indeed, to abandon hope must have been the feeling in many a timid breast. On the walls in the dim and uncertain light hung charts of the eye which seemed to show to the uninitiated the eye in various stages of physical and pathological deterioration. It needed but a Hamlet to remark, 'To what base uses we may return' to make this inquisitional-like chamber complete in all its forbidding aspects."

The book fills a niche that had long stood unfilled in the ranks of optometric literature, and Professor Woll is to be thanked and encouraged for the production of such a splendid work. We realize it is now out of print, but we hope the second edition comes shortly.

C. C. K.

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OPTOMETRIC LEGISLATION

Professional legislation, whether it is medical, dental or optometric, is the foundation upon which that profession is destined to grow and develop. If optometry is to reach its proper objective and be recognized as the class "A" profession which it is, it will be necessary that legislation be fostered which will aim to broaden its field and scope. We must not place any limitations in our laws which may prove to be obstacles in the way of healthy, scientific and professional development.

There has been a tendency of late in some states when legislation was framed to make it exclusive instead of inclusive. This is contrary to the best interests of optometry. It is poor practice for any profession to foster legislation which will limit its possibilities for future growth. The definitions of Optometry in most state laws are very limiting. They define optometry as it was 20 years ago, but not as it is today and take no account at all of the future. The laws in most states define optometry to be "the employment of any means other than the use of drugs, medicine or surgery for the measurement of the power of vision and the adaptation of lenses and prisms for the aid thereof." Surely modern optometry finds very little expression in that definition. As a contrast it is worth while to note the definition of optometry in a recent bill introduced in the British Parliament. There we find "the practice of optometry, refraction, sight-testing or the examination of the human eye for the purpose of ascertaining any departure from the normal state of vision, measuring its functional power and adapting mechanical means for the aid thereof, and the expression includes the giving of any treatment, advice or attendance on or to any person preparatory to or for the purpose of, or in connection with any of the processes aforesaid, and any treatment, advice or attendance usually given by optometrists or refractionists."

The next year will, most likely, be a legislative year, when many new Optometry amendments will be introduced in the various state legislatures. It will be well for the officers and the legislative committees to keep these points in mind, (a) that in defining optometry the definition should be broad enough to leave room for further expansion as the knowledge of ocular science increases, and (b) that no needless limitations be placed on the statute books, which may in the future hinder the natural development and progress of optometry.

J. I. K.

OPTOMETRIC QUACKERY

There seems to be a garden variety of man in optometry who is neither refractionist nor adjustor, but is just a "cracker-jack" salesman. He cannot be classed as an optometrist, as he is no more than a "subjective man" whose knowledge of refraction does not run beyond the fitting of spheres. He is not an adjustor, as witness his placing of 42 mm. round lenses on a 58 mm. interpupillary distance, and the frame out of alignment at that. His realm is that of salesmanship. How often have we had patients from these men, patients who are not satisfied, realize they have been "done" and are ashamed of their gullibility. The salesmanship seems to consist of promises only and the originator of these promises usually shows a surprising lack of optometric knowledge. It is not necessary to go into detail and enumerate what the promises are, as most optometrists have heard them from their patients. When the professional optometrist tries to correct the work of the commercial salesman of this type he realizes the tremendous harm that is being done to optometry.

A promise to cure becomes quackery. Promising to cure headaches, pain about the eyes and such is, in many cases, beyond our present ability. After all, the final analysis of vision is in the brain and we have no sure optometric control of this organ, so promises to cure and relieve are not consistent nor to the point. Then, again, the term astigmatism has become the bugbear of optometry. As one of our patients recently said, "If you fellows run across something that looks queer and want to force glasses on us you call it astigmatism." Since then the writer has avoided all mention of astigmatism even when great amounts are present unless the patient makes mention of it. It seems that the spectacle salesman uses astigmatism as a sort of microbe which, if it gets into the eye, becomes deadly and is removable only by his glasses.

An Eastern chain of optical departments feature a guarantee with their glasses, which, if we remember correctly, reads: "Our guarantee is that glasses will be changed, if necessary, without charge within one year." The "If necessary" clause, we understand, gives the salesman a chance to get out of any trouble which the wearer of the glasses may concoct, with or without a legitimate cause.

It is this sort of thing, done by these commercial optometrists, which keeps optometry from reaching its true "place in the sun."

E. O. F.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

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Reports of Society Proceedings in Iowa should be sent to Dr. D. A. Kinney, Charles City; in Maryland to Dr. J. F. Andreae, Baltimore; in Minnesota to Dr. J. A. Large, Winona; in Nebraska to Dr. C. A. Perrigo, Freemont; in North Dakota to Dr. A. S. Anderson, Williston, and in Oklahoma to Dr. E. B. Alexander, Duncan.

A. O. A. CONVENTION

Eight lecture hours will be the feature of the coming convention of the American Optometric Association, to be held June 28th to July 2nd, at San Francisco, California. The names of the principal speakers have not as yet been announced, but the committee assures us that the program will be both interesting and comprehensive.

Two attractive side trips are planned by the convention committee, the first, to be a trip to the University of California where the Optometry Department of this institution will be inspected and the second, a trip to the Redwood Forests, at Santa Cruz where a redwood tree will be dedicated to the late Dr. A. J. Cross.

The convention committee is anxious to know the names of the optometrists planing to make the trip, and urge all to write to Dr. I. I. Lasdan, 806 Phelan Building, San Francisco, as soon as possible. Dr. Lasdan will arrange for your comfort while in the convention city.

ATTENTION, MINNESOTA OPTOMETRISTS

Your officers of the Minnesota State Association of Optometrists have made extensive plans for a constructive program of vital importance to every practicing optometrist in the state of Minnesota. The urgent necessity for united action must be apparent to all when serious consideration is given to the various optometric problems of today as well as the near future.

Our educational department is prepared to supply and distribute to all those interested a series of subjects by such authors as Sheard, Laurence, Wiseman, Ryer, Needles, Maybee, Ketchum, Woll, Minchin, Slade and Surdan. The arrangement by which we intend to present this educational work will prove exceptionally interesting and of inestimable value in your daily practice. We are actively analyzing the school problem and hope to be assured of the establishment of an optometric course in the State University in the very near future, and if unsuccessful in these plans we shall provide for proper instruction through the establishment of a private school. Plans for short-time clinics are under way to be held in all localities where societies, or groups of optometrists, are working together, this to serve an educational, practical and a publicity need.

Our publicity department has some splendid publicity material prepared in such form as to serve for radio talks, luncheon talks and newspaper stories. We intend to let the majority of the people in Minnesota know more about proper eye care and optometry this year. The publicity we are certain of getting with the operation of short-time clinics will exceed in value most any amount of paid advertising space. We also intend distributing some of the splendid A. O. A. booklets.

Our department on legislation is well aware of our further legislative needs and the value of early preparation and, therefore, has set about to draw amendments to our present law as well as to be prepared in the protection of optometry's interests in such bill or bills as we understand are to be introduced in the next session of the legislature wherein optometry must be accorded proper consideration. An outstanding necessary amendment to our law at this time is: THE SALE OF ALL GLASSES (other than sun or protection glasses) should be limited to only those legally qualified to prescribe glasses. Also, the replacement of any ophthalmic lens should be limited to only those qualified to prescribe or upon prescription from same. The optometrist and the public are heavy losers because of our present indifference to this condition.

I have attempted in a very brief and general way to outline some of our proposed activities and as our efforts and success with same will depend largely on your cooperation in all ways, financially and otherwise, permit me to leave this serious thought with you at this time. Optometry in Minnesota is in immediate need of an extensive and constructive program—your officers have such a program—do you realize the needs of optometry sufficiently to assist in whatever capacity possible?

YOU CAN IF YOU WILL.

A. H. NORDLAND, Opt. D.,
President.

WEST VIRGINIA CONVENTION

The annual convention of the West Virginia Optometric Association will be held at Charleston on May 31st and June 1st. Dr. Carl Shepherd of Chicago will give the principal technical address, while Dr. Harry Paul of the same city will discuss optometric legislative activities. There will be several other talks and papers and the secretary, Dr. George C. Farrell, urges all members to attend.

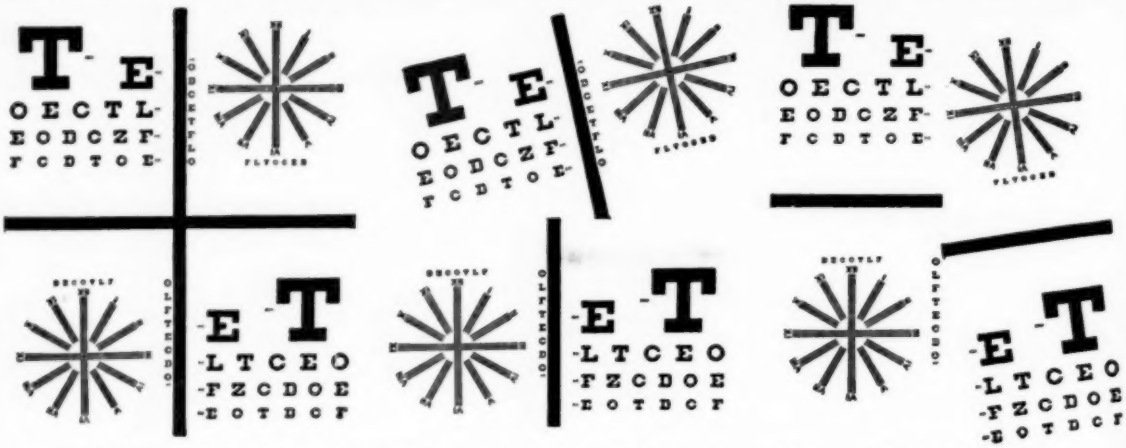
SOUTHEASTERN CONGRESS

The Southeastern Congress well be held in Asheville, N. C. the 25, 26 and 27 of May.

There will appear on the program a group of nationally known clinicians, writers, lecturers and research workers. Dr. J. I. Pascal of New York will lecture on "Static and Dynamic Retinoscopy and their relation to other tests." Dr. W. B. Needles will demonstrate the standard minimum eye examination. He will also lecture on "Muscular Imbalance at the Near Point" and "Over Accommodation as a factor in Glaucoma."

Dr. Edwin F. Tait will lecture on "Muscular Anomalies and their treatment" and Dr. Geo. C. Farrell will talk on the past history of Optometry and its effect on the present and its relation to the future.

Dr. John D. Perry, secretary and treasurer of the Southeastern Region, claims that a very big attendance is expected at the congress and urges all optometrists located in that region to send in their reservations early.



You get a case that has been the rounds of "all the good specialists in the city"; no glasses have been found that give relief. You seat the patient before a chart like the above and bring the Hemisensory Binoculometer into position: promptly the patient reports conditions as depicted above. You at once recognize it to be esophoria, associated with a great cyclophoria. It is unmistakable, all doubt is thrown to the four winds.

You now turn the instrument to make vertical test; the cyclophoria is again shown, associated with right hyperphoria. Ah! plus lenses **removed** the esophoria but the cyclophoria and the hyperphoria remained unchanged. What should you do? Can you give this patient comfort?

CERTAINLY YOU CAN; the H. B. test has shown you conclusively that the plus lenses remove the esophoria,—**that accommodation and convergence are working in harmony**; all that remains is to correct the hyperphoria with prisms incorporated in the prescription for glasses AND THE CYCLOPHORIA WILL DISAPPEAR,—and your patient will be happy, and so will you.

THE H. B. TEST BRINGS HAPPINESS TO BOTH THE PATIENT AND THE DOCTOR EVERY TIME; order today.

The Hemisensory Binoculometer

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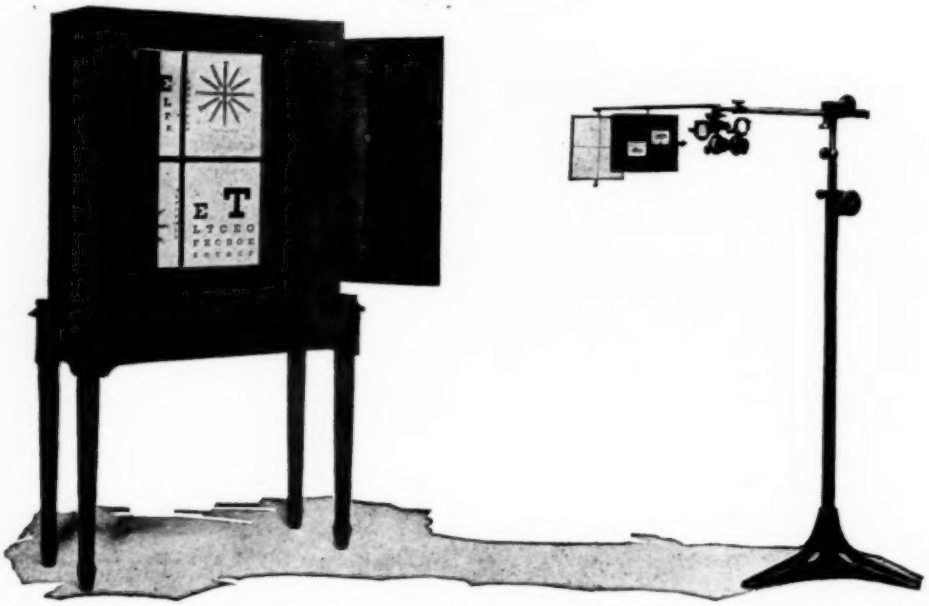

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